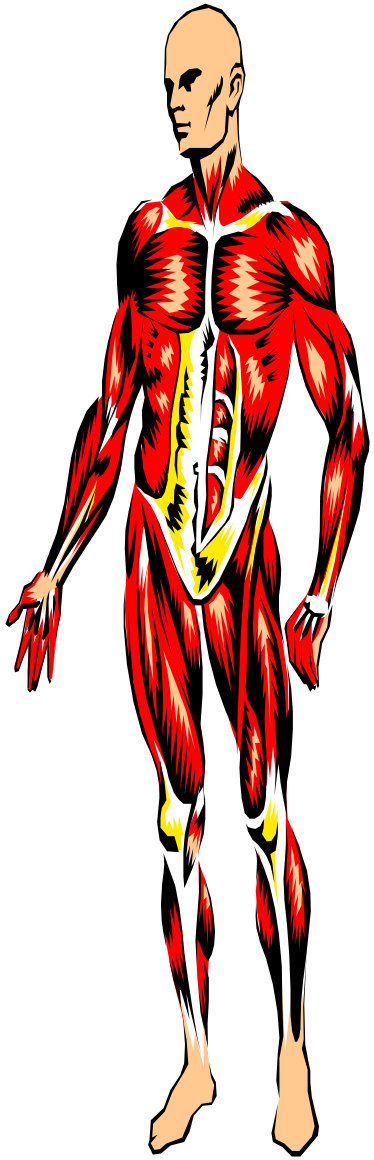
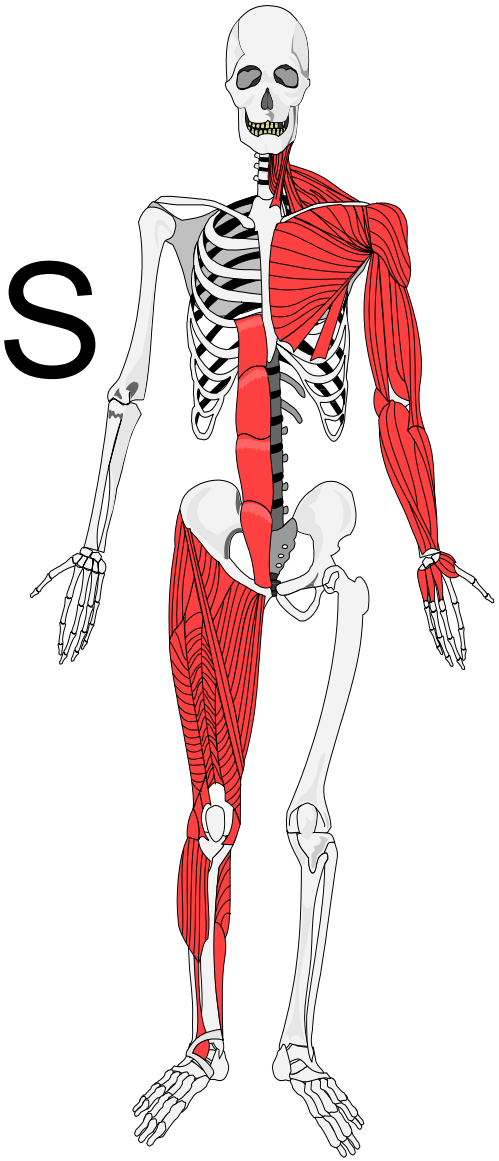
BASIC ASPECTS OF BODY STRUCTURES





LESSON OBJECTIVE

Identify the basic structure and make-up of the human body.

OVERVIEW

- Describe the basic composition of a cell.
- Define tissue, organs, and systems.
- Describe the composition of tissue, organs, and systems.

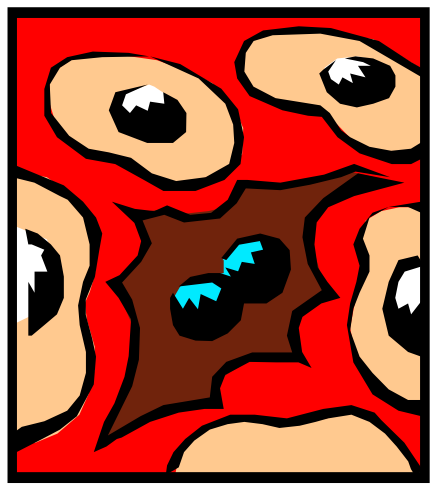
CELLS

Smallest unit of living matter

Composition

Cell membrane

- Oxygen (O_2)
- Salt
- Protein
- Carbohydrates
- Water



Composition

Cytoplasm

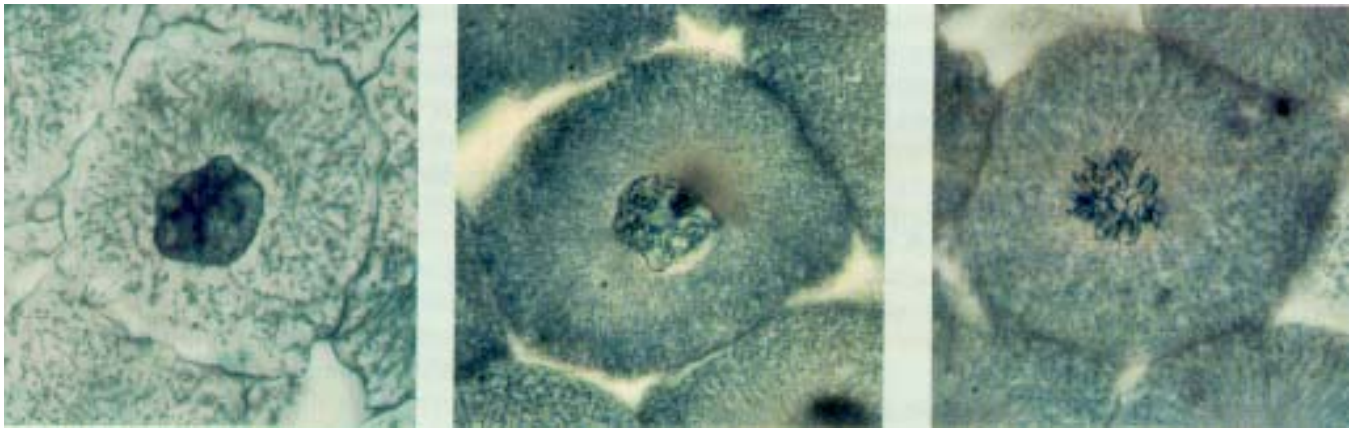
Composition

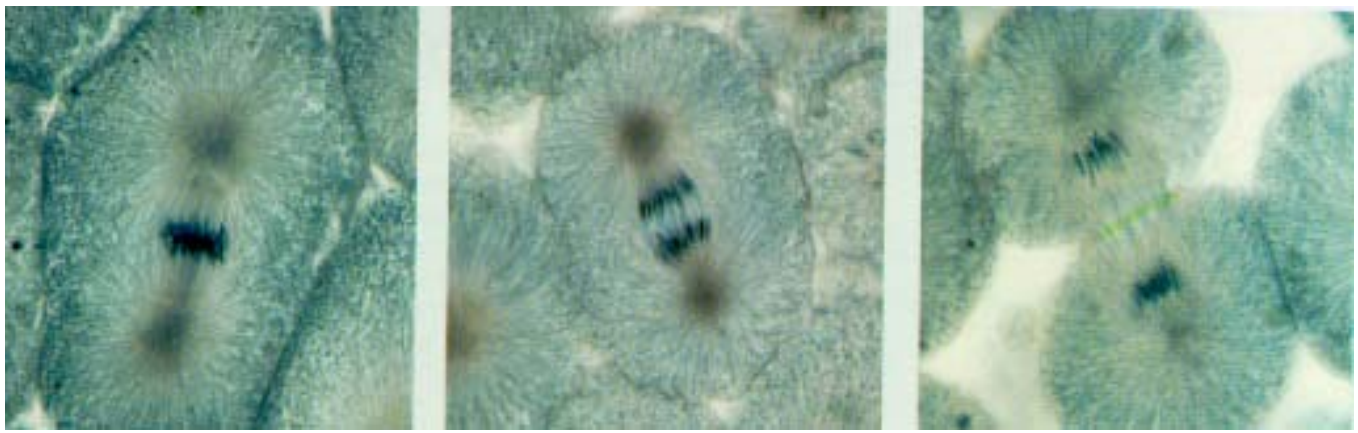
Nucleus

- Control center
- Usually located in the center
- Responsible for reproduction

Reproduction

“mitosis”





Reproduction

Reasons for cell divisions

- Replace old cells
- Build new tissue
- Maintain body growth
- Repair damaged cells

TISSUE

Similar cells grouped together to create the next higher level of composition to perform a specific related function.

Epithelial

- Covers body surfaces & lines its cavities.
  - Protection
  - Absorption
  - Filtration
  - Secretion

Connective

- Characterized by cells separated by a matrix, that often contain fibers.

  - Binds organs together
  - Support
  - Protection
  - Insulation
  - Storage of fat

Muscular

- Tissue adapted to contract; composed of long, slender cells *(fibers)* held together by connective tissue.
  - Provide movement of the body

Nervous

- Composed of nerve cells
  - Receive & transmit impulses from one area to another

Blood & Lymph

- Free flowing cells carried in the body fluids & bloodstream
- Carry O_2 & nutrients to cells & waste products from cells

ORGANS

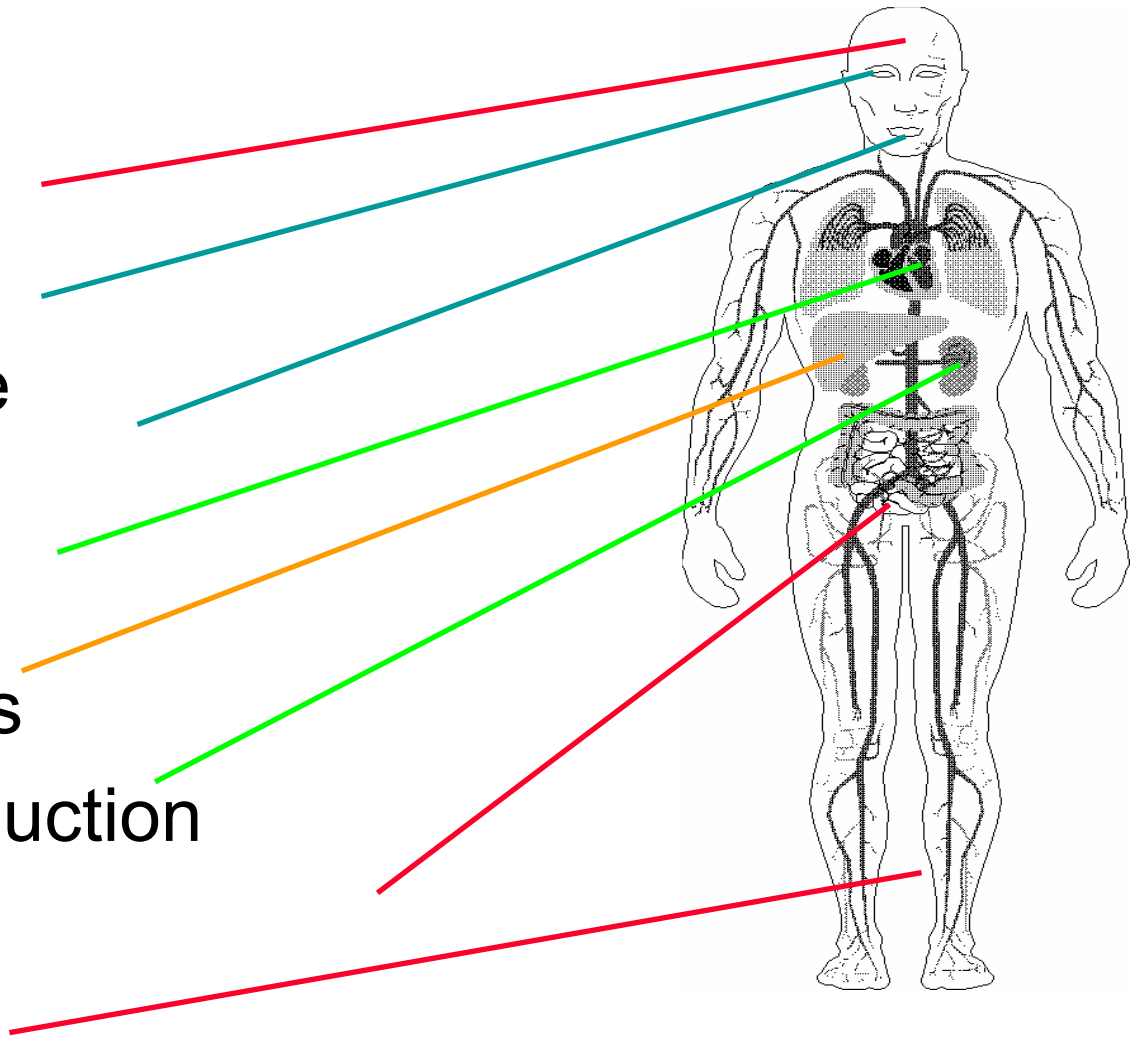
The next higher form of body structures

Formed by cells & several types of tissue that combine to perform a specialized function.

Organs

Examples:

- Brain
- Eyes
- Tongue
- Heart
- Liver
- Kidneys
- Reproduction
- Skin



SYSTEMS

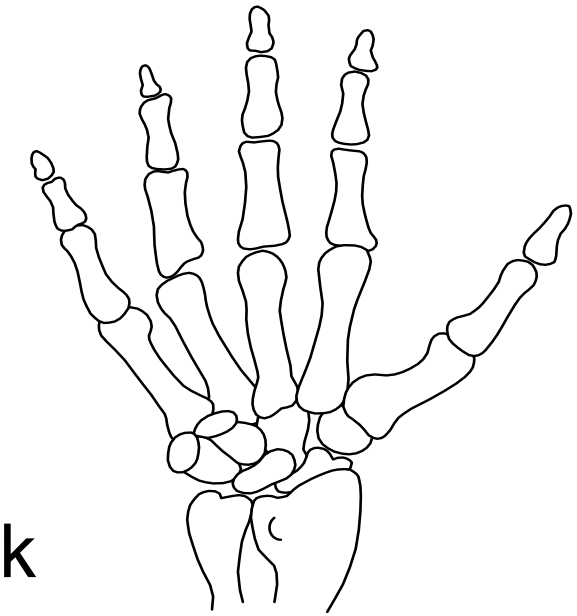
Groups of organs closely related to form a functional part of the body upon which other systems depend on for life.

Integumentary

- Skin, sweat and oil glands, hair & nails
  - External support
  - Protection of body

Musculoskeletal

- Muscular -
  - Body movement
  - Production of

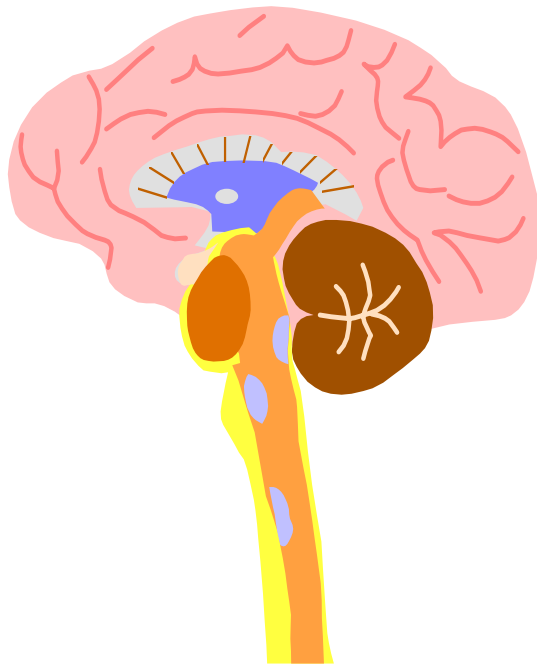


Skeletal -

- Provides support & framework for body movement
- produces blood cells

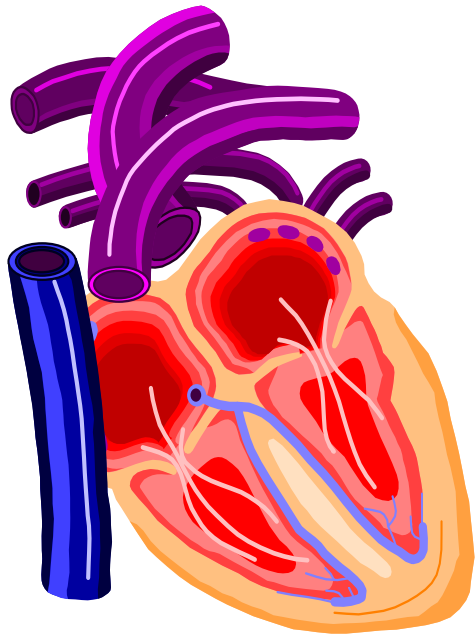
Nervous

- Brain, spinal cord & associated nerves
  - Makes the body work together as a unit
  - Regulates all body activities
    - Learning & memory

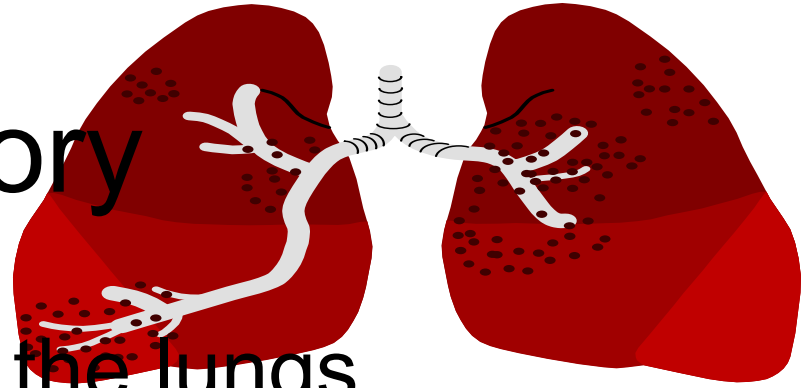


Circulatory
Cardiovascular

- Heart & blood vessels
  - Transports life-sustaining materials to cells
  - Removes metabolic waste from cells



Respiratory



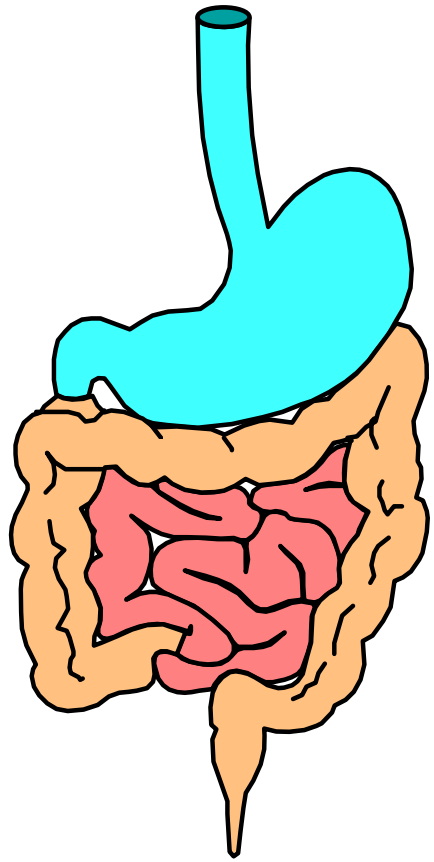
- Nasal / oral passage to the lungs

  - Gaseous exchange between external environment & blood

    - Delivers O_2 & removes CO_2

Digestive
Gastrointestinal

- Mouth to anus
  - Breakdown & absorption of food materials *(digestion)*



Endocrine

- Endocrine glands
  - Secretions of hormones for chemical regulation

Genitourinary

- Excretory: Kidneys, ureters, bladder, and urethra.
  - Filtration of blood
  - Maintenance of volume & chemical composition of the blood

Genitourinary

- Organs involved in reproduction.
  Reproductive system (male):
  - Production of sex cells (sperm)
  - Transfer of sperm

Genitourinary

- Organs involved in reproduction.

  Reproductive system (female):

  – Production of sex cells (ova)
  – Receptacle for sperm
  – Site for fertilization of ovum, implantation, and development of embryo & fetus
  – Delivery of fetus

Lymphatic

- Lymphatic vessels and lymphoid organs.
  - Body immunity
  - Absorption of fat
  - Drainage of tissue fluid (returns to bloodstream)

SUMMARY

The Cell

- Composition
- Reproduction

SUMMARY

Tissue

- Epithelial
- Connective
- Muscular
- Nervous
- Blood and Lymph

SUMMARY

Organs

- Formed by
- Examples

SUMMARY

Systems

- Integumentary
- Musculoskeletal
- Nervous
- Circulatory
- Respiratory
- Digestive
- Endocrine
- Genitourinary
- Lymphatic